MOLECULIN BIOTECH, INC.

FORM 10-Q
(Quarterly Report)

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Address	5300 MEMORIAL DRIVE SUITE 950 HOUSTON, TX, 77007
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Sector	Healthcare
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Table of Contents

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-Q

☒ QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the quarterly period ended March 31, 2025

or

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from _____ to _____

Commission File Number: 001-37758

MOLECULIN BIOTECH, INC.

(Exact name of registrant as specified in its charter)

Delaware	**2834**	**47-4671997**
(State or Other Jurisdiction of Incorporation or Organization)	(Primary Standard Industrial Classification Code Number)	(IRS Employer Identification Number)

5300 Memorial Drive, Suite 950 Houston, TX (Address of principal executive offices)	**77007** (Zip Code)

713-300-5160
(Registrant's telephone number, including area code)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Registration S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.:

Large accelerated filer ☐
Non-accelerated filer ☒
Accelerated filer ☐
Smaller reporting company ☒
Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act.): Yes ☐ No ☒

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol (s)	Name of each exchange on which registered
Common Stock, par value $0.001 per share	MBRX	The NASDAQ Stock Market LLC

The registrant had 14,127,494 shares of common stock outstanding at May 6, 2025.

Moleculin Biotech, Inc.
Form 10-Q
Table of Contents

PART 1 FINANCIAL INFORMATION

Item 1. Financial Statements

Moleculin Biotech, Inc.
Condensed Consolidated Balance Sheets
(in thousands, except for share and per share data)
(Unaudited)

	March 31, 2025	December 31, 2024
Assets		
Current assets:		
Cash and cash equivalents	$ 7,716	$ 4,278
Prepaid expenses and other current assets	1,624	916
Total current assets	9,340	5,194
Furniture and equipment, net	127	159
Intangible assets	11,148	11,148
Operating lease right-of-use asset	398	424
Total assets	$ 21,013	$ 16,925
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 2,706	$ 2,030
Accrued expenses and other current liabilities	4,190	3,329
Total current liabilities	6,896	5,359
Operating lease liability - long-term, net of current portion	326	358
Warrant liability - long-term	13,749	5,229
Total liabilities	20,971	10,946
Commitments and contingencies (Note 7)		
Stockholders' equity		
Preferred stock, $0.001 par value; 5,000,000 shares authorized, no shares issued or outstanding	—	—
Common stock, $0.001 par value; 100,000,000 shares authorized; 14,127,494 and 3,378,895 shares issued and outstanding at March 31, 2025 and December 31, 2024, respectively	14	3
Additional paid-in capital	159,869	159,384
Accumulated other comprehensive loss	(38)	(41)
Accumulated deficit	(159,803)	(153,367)
Total stockholders' equity	42	5,979
Total liabilities and stockholders' equity	$ 21,013	$ 16,925

See accompanying notes to condensed consolidated financial statements.

Moleculin Biotech, Inc.
Condensed Consolidated Statements of Operations and Comprehensive Loss
(in thousands, except share and per share data)
(Unaudited)

	Three Months Ended March 31,	
	2025	**2024**
Revenues	$ —	$ —
Operating expenses:		
Research and development	3,435	4,252
General and administrative	2,477	2,393
Depreciation and amortization	31	32
Total operating expenses	5,943	6,677
Loss from operations	(5,943)	(6,677)
Other income (loss):		
Gain from change in fair value of warrant liability	9,054	1,455
Transaction costs allocated to warrant liabilities	(1,788)	—
Loss on issuance of warrant liabilities	(7,798)	—
Other income, net	9	11
Interest income, net	30	241
Net loss	$ (6,436)	$ (4,970)
Net loss per common share - basic and diluted	$ (0.69)	$ (2.02)
Weighted average common shares outstanding, basic and diluted	9,343,771	2,466,174
Net Loss	$ (6,436)	$ (4,970)
Other comprehensive income (loss):		
Foreign currency translation	3	(9)
Comprehensive loss	$ (6,433)	$ (4,979)

See accompanying notes to condensed consolidated financial statements.

Moleculin Biotech, Inc.
Condensed Consolidated Statements of Cash Flows
(in thousands)
(Unaudited)

	Three Months Ended March 31,	
	2025	**2024**
Cash flows from operating activities:		
Net loss	$ (6,436)	$ (4,970)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	31	32
Stock-based compensation	485	493
Change in fair value of warrant liability	(9,054)	(1,455)
Loss on issuance of warrant liabilities	7,798	—
Operating lease, net	118	108
Transaction costs allocated to warrant liabilities	1,788	—
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	(708)	590
Accounts payable	676	(394)
Accrued expenses and other current liabilities	738	(1,121)
Net cash used in operating activities	(4,564)	(6,717)
Cash flows from investing activities:		
Purchase of fixed assets	—	—
Net cash used in investing activities	—	—
Cash flows from financing activities:		
Proceeds from exercise of warrants	4	—
Proceeds from sale of common stock, pre-funded and common warrants, net of issuance and transaction costs, and warrant inducement	7,995	—
Net cash provided by financing activities	7,999	—
Effect of exchange rate changes on cash and cash equivalents	3	(9)
Net increase (decrease) in cash and cash equivalents	3,438	(6,726)
Cash and cash equivalents, - beginning of period	4,278	23,550
Cash and cash equivalents, - end of period	$ 7,716	$ 16,824
Supplemental disclosures of cash flow information:		
Non-cash investing and financing activities:		
Transaction costs related to the sale of common stock, pre-funded and common warrants	$ 457	$ —
Offering costs included in accounts payable and accrued liabilities	$ 22	$ —

See accompanying notes to condensed consolidated financial statements.

Moleculin Biotech, Inc.
Condensed Consolidated Statements of Stockholders' Equity
(in thousands, except for shares)
(Unaudited)

	Three Months Ended March 31, 2025					
	Common Stock					
	Shares	Par Value Amount	Additional Paid-In Capital	Accumulated Deficit	Accumulated Other Comprehensive Income (Loss)	Total Stockholders' Equity
Balance, December 31, 2024	3,378,895	$ 3	$ 159,384	$ (153,367)	$ (41)	$ 5,979
Warrant inducement and exercise of repriced common stock warrants at $1.00 per share	5,828,570	6	—	—	—	6
Warrants exercised	3,770,029	4	—	—	—	4
Issued for cash - sale of common stock, pre-funded and common warrants	1,150,000	1	—	—	—	1
Stock-based compensation	—	—	485	—	—	485
Net loss	—	—	—	(6,436)	—	(6,436)
Cumulative translation adjustment	—	—	—	—	3	3
Balance, March 31, 2025	14,127,494	$ 14	$ 159,869	$ (159,803)	$ (38)	$ 42

	Three Months Ended March 31, 2024					
	Common Stock					
	Shares	Par Value Amount	Additional Paid-In Capital	Accumulated Deficit	Accumulated Other Comprehensive Income (Loss)	Total Stockholders' Equity
Balance, December 31, 2023	2,227,516	$ 33	$ 157,653	$ (131,604)	$ (9)	$ 26,073
Issuance of common stock to consultants	6,834	—	37	—	—	37
Reverse stock split	77,186	(31)	31	—	—	-
Stock-based compensation	—	—	456	—	—	456
Net loss	—	—	—	(4,970)	—	(4,970)
Cumulative translation adjustment	—	—	—	—	(9)	(9)
Balance, March 31, 2024	2,311,536	$ 2	$ 158,177	$ (136,574)	$ (18)	$ 21,587

See accompanying notes to condensed consolidated financial statements.

Moleculin Biotech, Inc.
Notes to the Condensed Consolidated Financial Statements
(Unaudited)

1. Nature of Business

The terms “MBI” or “the Company”, “we”, “our” and “us” are used herein to refer to Moleculin Biotech, Inc. MBI is a clinical-stage pharmaceutical company, organized as a Delaware corporation in July 2015. MBI is a late-stage pharmaceutical development company currently conducting a pivotal Phase 3 trial evaluating Annamycin, also known by its non-proprietary name "naxtarubicin", in combination with Cytarabine for the treatment of subjects with released/refractory acute myeloid leukemia. Additionally, the Company has two portfolios of technologies for hard-to-treat cancers and viruses with clinical and preclinical research funded by investigators at academic institutions.

Each of its three core technologies is based substantially on discoveries made at and licensed from the University of Texas MD Anderson Cancer Center (MD Anderson) in Houston, Texas, and features one or more drugs that have successfully completed a Phase 1 clinical trial. Three of its six drug candidates have shown human activity in clinical trials and are currently or have been in Phase 1B/2 or Phase 2 clinical trials. Since MBI’s inception, its drugs have completed, are currently in, or have been permitted to proceed in, fourteen clinical trials. Annamycin, in a unique multilamellar lipid formulation, is the Company’s lead molecule, and MBI has recently concluded one Phase 1B/2 clinical trial for treating Acute Myeloid Leukemia (AML) and has begun treating subjects in its Phase 3 clinical trial for the treatment of AML. Annamycin is also in two Phase 1B/2 clinical trials for treating Soft Tissue Sarcoma metastasized to the lungs (STS lung metastases, STS lung mets, or Advanced STS), on physician sponsored. Additionally, there is another phase 1B/2 clinical trial that is physician sponsored which is investigating using WP1066 in combination with radiation for the treatment of glioblastoma, a form of brain cancer.

The physician-sponsored trials utilize primarily external funds, such as grant funds, which are not presented in these financial statements. The Company does not have manufacturing facilities and all manufacturing activities are contracted out to third parties. Additionally, the Company does not have a sales organization. The Company’s overall strategy is to seek potential out-licensing or outsourcing opportunities with development/commercialization strategic partners who are better suited for the marketing, sales and distribution of its drugs, if approved.

In 2019, the Company sublicensed its technologies to Animal Life Sciences, Inc. (ALI), to enable research and commercialization for non-human use and share development data. As part of this agreement, ALI issued to the Company a 10% equity interest in ALI.

2. Basis of presentation, principles of consolidation, and significant accounting policies and liquidity

Reverse Stock Split - On March 22, 2024, the Company completed a reverse stock split of all the issued and outstanding share of the Company’s common stock at a ratio of 1 to 15. The accompanying consolidated financial statements and notes to the consolidated financial statements gives retroactive effect to the reverse stock split for all periods presented. Certain amounts previously reported include rounding up of fractional shares as a result of the reverse stock split.

Basis of Presentation – Condensed Consolidated Financial Information - The accompanying condensed consolidated financial statements and related notes have been prepared in accordance with accounting principles generally accepted in the U.S. (U.S. GAAP) for financial information, and in accordance with the rules and regulations of the U.S. Securities and Exchange Commission (SEC) with respect to Form 10-Q and Article 8 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by U.S. GAAP for complete financial statements. The condensed consolidated financial statements furnished reflect all normal adjustments, which are, in the opinion of management, necessary for a fair statement of results for the interim periods presented. Interim results are not necessarily indicative of the results for the full year. These condensed consolidated financial statements should be read in conjunction with the audited financial statements of the Company as of December 31, 2024 and for the year then ended, including the notes thereto contained in the Form 10-K filed with the SEC on March 21, 2025.

Principles of Consolidation - The accompanying condensed consolidated financial statements include the accounts of the Company and its wholly owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation. The Company views its operations and manages its business in one operating segment. All material long-lived assets of the Company reside in the United States. In accordance with FASB ASC Topic 280, Segment Reporting, the Company views its operations and manages its business as one segment. As a result, the financial information disclosed herein represents all of the material financial information related to its principal operating segment.

Segment Information - Management has determined that the Company operates in one reportable segment, which is the development and commercialization of drug products. The Company's chief operating decision maker (CODM) is its Chief Executive Officer and Chairman, who reviews financial information presented on a consolidated basis. The CODM primarily uses consolidated net loss, which is also reported on the Consolidated Statements of Operations and Comprehensive Loss as net loss, to assess financial performance and allocate resources. These financial metrics are used by the CODM to make key operating decisions, such as the assessment of segment performance and allocation of resources. The significant expense categories within net loss from operations that the CODM regularly reviews are research and development expenses and general and administrative expenses. The significant expense categories and subcategories are reported on the Consolidated Statements of Operations and Comprehensive Loss. Other expenses included in the Company’s net loss include change in fair value of warrant liabilities, other income (expense), interest income, net, and any additional non-operating expenses that are reported on the Consolidated Statements of Operations and Comprehensive Loss.

Significant Accounting Policies - The Company's significant accounting policies are described in Note 2, *Basis of Presentation, principles of consolidation and significant accounting policies*, to the consolidated financial statements included in the Company's Annual Report on Form 10-K for the year ended December 31, 2024. There have been no material changes to the significant accounting policies during the three months ended March 31, 2025.

Use of Estimates - The preparation of these condensed consolidated financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of expenses during the reporting period. Actual results could differ from those estimates. Management considers many factors in selecting appropriate financial accounting policies and controls, and in developing the estimates and assumptions that are used in the preparation of these financial statements. Management must apply significant judgment in this process. In addition, other factors may affect estimates, including expected business and operational changes, sensitivity and volatility associated with the assumptions used in developing estimates, and whether historical trends are expected to be representative of future trends. The estimation process often may yield a range of potentially reasonable estimates of the ultimate future outcomes and management must select an amount that falls within that range of reasonable estimates. This process may result in actual results differing materially from those estimated amounts used in the preparation of financial statements. Estimates are used in the following areas, among others: fair value estimates on intangible assets, warrants, and stock-based compensation expense, as well as accrued expenses and taxes.

Going Concern and Liquidity - These condensed consolidated financial statements have been prepared on a going concern basis, which assumes the Company will continue to realize its assets and discharge its liabilities in the normal course of business. The continuation of the Company as a going concern is dependent upon the ability of the Company to obtain necessary equity financing to continue operations and the attainment of profitable operations. As of March 31, 2025, the Company had an accumulated deficit of $159.8 million since inception and had not yet generated any revenues from operations. Additionally, management anticipates that its cash on hand of $7.7 million as of March 31, 2025 is not sufficient to fund its planned operations for a period of at least one year from when these consolidated financial statements are issued. These factors raise substantial doubt regarding the Company's ability to continue as a going concern. These unaudited condensed consolidated financial statements do not include any adjustments to the recoverability and classification of recorded asset amounts and classification of liabilities that might be necessary should the Company be unable to continue as a going concern. The Company intends to seek additional funding through one or more of the following: a combination of equity offerings, debt financings, government or other third-party funding, commercialization, marketing and distribution arrangements, other collaborations, strategic alliances and licensing arrangements and delay planned cash outlays or a combination thereof. There can be no assurance that such events or a combination thereof can be achieved.

In March 2022, the Company received a subpoena from the SEC requesting information and documents, including materials related to certain individuals (none of which are the Company's officers or directors) and entities, and materials related to the development of and statements regarding the Company's drug candidate for the treatment of COVID-19. The Company has received, and expects to continue to receive, periodic further requests from the SEC staff with respect to this matter. The Company is not aware of the specific nature of the underlying investigation by the SEC, and to the extent that this investigation relates to prior public disclosures that it has made, the Company believes in the accuracy and adequacy of such prior disclosures. The correspondence from the SEC transmitting the subpoena to the Company states that the SEC is trying to determine whether there have been any violations of federal securities laws, but that its investigation does not mean that the SEC has concluded that anyone has violated the law or that the SEC has a negative opinion of any person, entity, or security. The Company cannot predict when this matter will be resolved or what, if any, action the SEC may take following the conclusion of the investigation. The Company expensed approximately $0.02 million and $0.1 million in related general and administrative fees and expenses for the three months ended March 31, 2025 and 2024, respectively. The Company is in the process of filing a claim with its insurance carriers related to this loss which may cover a portion of the related expenses but not all. The Company has not hit the retention limits, so no reimbursement is expected. Accordingly, the Company has not recorded any provision for insurance reimbursement as of March 31, 2025.

Cash and Cash Equivalents - Financial instruments that potentially subject the Company to a concentration of credit risk consist of cash and cash equivalents. The Company maintains cash accounts principally at one financial institution in the U.S., which at times, may exceed the Federal Deposit Insurance Corporation’s limit. The Company has not experienced any losses from cash balances in excess of the insurance limit. The Company’s management does not believe the Company is exposed to significant credit risk at this time due to the financial condition of the financial institution where its cash is held.

Intangible Assets – Intangible assets with finite lives are amortized using the straight-line method over their estimated period of benefit. Acquired intangible assets identified as in-process research and development (IPR&D) assets, are considered indefinite lived until the completion or abandonment of the associated research and development efforts. If the associated research and development effort is abandoned, the related IPR&D assets will be written-off and the Company will record a noncash impairment loss on its statements of operations. For those compounds that reach commercialization, the IPR&D assets will be amortized over their estimated useful lives. Intangible assets are tested for impairment on an annual basis, which was completed as of September 30, 2024, and between annual tests if indicators of potential impairment exist, using a fair-value-based approach. The Company evaluates the recoverability of intangible assets periodically and take into account events or circumstances that warrant revised estimates of useful lives or that indicate that impairment exists. No impairments of intangible assets have been identified during any of the periods presented.

Prepaid Expenses and Other Current Assets - Prepaid expenses and other current assets consist of the following (in thousands):

	March 31, 2025	December 31, 2024
Vendor prepayments and deposits	$ 1,325	$ 331
Prepaid insurance	293	554
Prepaid sponsored research	—	11
Related party receivables	4	4
Non-trade receivables	2	16
Total prepaid expenses and other current assets	$ 1,624	$ 916

Fair Value of Financial Instruments - The Company's financial instruments consist primarily of non-trade receivables, accounts payable, accrued expenses and its warrant liability. The carrying amount of non-trade receivables, accounts payable, and accrued expenses approximates their fair value because of the short-term maturity of such.

The Company has categorized its assets and liabilities that are valued at fair value on a recurring basis into a three-level fair value hierarchy in accordance with U.S. GAAP. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. The fair value hierarchy gives the highest priority to quoted prices in active markets for identical assets and liabilities (Level 1) and lowest priority to unobservable inputs (Level 3).

Assets and liabilities recorded in the condensed consolidated balance sheets at fair value are categorized based on a hierarchy of inputs as follows:

Level 1 – Unadjusted quoted prices in active markets of identical assets or liabilities.
Level 2 – Quoted prices for similar assets or liabilities in active markets or inputs that are observable for the asset or liability, either directly or indirectly through market corroboration, for substantially the full term of the financial instrument.
Level 3 – Unobservable inputs for the asset or liability.

The Company’s financial assets and liabilities recorded at fair value on a recurring basis include the fair value of warrant liability discussed in Note 4.

The following table provides the financial liabilities reported at fair value and measured on a recurring basis at March 31, 2025 and December 31, 2024 (table in thousands):

Description	Fair Value	Level 1	Level 2	Level 3
Fair value of warrant liability as of March 31, 2025:	$ 13,749	$ —	$ —	$ 13,749
Fair value of warrant liability as of December 31, 2024:	$ 5,229	$ —	$ —	$ 5,229

The table below of Level 3 liabilities (table in thousands) begins with the valuation as of the beginning of the first quarter and then is adjusted for changes in fair value that occurred during the first quarter. The ending balance of the Level 3 financial instrument presented above represents the Company's best estimates and may not be substantiated by comparison to independent markets and, in many cases, could not be realized in immediate settlement of the instruments.

Three Months Ended March 31, 2025	Warrant Liability Long-Term
Balance, December 31, 2024	$ 5,229
Warrants issued	19,031
Warrants exercised	(1,457)
Change in fair value - net	(9,054)
Balance, March 31, 2025	$ 13,749

Loss Per Common Share - Basic net loss per common share is computed by dividing net loss available to common shareholders by the weighted-average number of common shares outstanding during the period. For purposes of this calculation, options to purchase common stock, restricted stock units subject to vesting and warrants to purchase common stock are considered to be common stock equivalents. Diluted net loss per common share is determined using the weighted-average number of common shares outstanding during the period, adjusted for the dilutive effect of common stock equivalents. In periods when losses are reported, the weighted-average number of common shares outstanding excludes common stock equivalents, because their inclusion would be anti-dilutive. For the three months ended March 31, 2025 and 2024, approximately 14.0 million and 1.7 million, respectively, of potentially dilutive shares were excluded from the computation of diluted earnings per share due to their anti-dilutive effect.

Subsequent Events - The Company’s management reviewed all material events through the date of these unaudited condensed consolidated financial statements.

Recent Accounting Pronouncements - In November 2024 and January 2025, FASB issued ASU 2024-03, Income Statement - Reporting Comprehensive Income - Expense Disaggregation Disclosures (Subtopic 220-40): Disaggregation of Income Statement Expenses, which requires disclosure in the notes to the financial statements of specified information about certain costs and expenses. The amendments are effective for fiscal years beginning after December 15, 2026, and for interim periods within fiscal years beginning after December 15, 2027. Early adoption is permitted. The amendments should be applied either prospectively to financial statements issued for reporting periods after the effective date of this ASU or retrospectively to any or all prior periods presented in the financial statements. The Company is currently evaluating the new guidance to determine the impact it may have on its consolidated financial statements and related disclosures, but expects additional disclosures upon adoption.

In December 2023, the Financial Accounting Standards Board, or FASB, issued Accounting Standards Update, or ASU 2023-09, Income Taxes (Topic 740): Improvements to Income Tax Disclosures. ASU 2023-09 improves the transparency of income tax disclosures by requiring consistent categories and greater disaggregation of information in the effective tax rate reconciliation and income taxes paid disaggregated by jurisdiction. It also includes certain other amendments to improve the effectiveness of income tax disclosures. This guidance is effective for the annual periods beginning after the year ended December 31, 2024. There was no material impact upon adoption of ASU 2023-09 on the Company's interim disclosures.

There are no other effective pronouncements, or pronouncements issued but not yet effective, if adopted, would have a material effect on the accompanying financial statements.

3. Accrued expenses and other current liabilities

Accrued expenses and other current liabilities consist of the following components (in thousands):

	March 31, 2025	December 31, 2024
Accrued payroll and bonuses	$ 2,005	$ 1,817
Accrued research and development	1,198	858
Accrued legal, regulatory, professional and other	689	404
Accrued liabilities due to related party	174	130
Operating lease liability - current	124	120
Total accrued expenses and other current liabilities	$ 4,190	$ 3,329

Additionally, accounts payable includes $20,000 as of March 31, 2025 and December 31, 2024, respectively, for related party payables.

4. Warrants and Equity

Warrant and Stock Issuances

In February 2025, the Company entered into a securities purchase agreement with an institutional investor for the sale by the Company of 1,150,000 shares of common stock, and 2,121,029 pre-funded warrants to purchase shares of common stock, and series D warrants to purchase up to 6,543,058 shares of common stock. The combined purchase price for the securities was $1.07 per share of common stock (or pre-funded warrant in lieu thereof). Each pre-funded warrant was exercisable for one share of common stock at an exercise price of $0.001 per share. The pre-funded warrants are exercisable immediately and may be exercised at any time until all of the pre-funded warrants are exercised in full, subject to the beneficial ownership limitation. All of the pre-funded warrants were exercised during the three months ended March 31, 2025. Each common warrant will be exercisable upon the

receipt of shareholder approval (which is anticipated to occur in the near term), will have an exercise price of $1.07 per share, and expire five years from the initial exercise date. The Company received gross proceeds of $3.5 million.

In February 2025, the Company entered into a warrant exercise inducement offer letter with a holder of certain existing warrants to receive new warrants to purchase up to a number of shares of common stock equal to 200% of the number of warrant shares issued pursuant to the exercise of such existing warrants to purchase up to 5,828,570 shares of common stock pursuant to which the holder agreed to exercise for cash their existing warrants at a reduced exercise price of $1.00 in exchange for the Company's agreement to issue the inducement warrants to purchase up to 11,657,140 shares (Series C warrants) of the Company's common stock. Each inducement warrant has an exercise price of $0.75 and is exercisable as of the date of issuance and may be exercised for a period of five years. The Company received gross proceeds of $5.8 million. Total gross proceeds received in February 2025 were $9.3 million.

In August 2024, the Company entered into a securities purchase agreement with an institutional investor for the sale by the Company of 283,000 shares of common stock, and 2,183,368 pre-funded warrants to purchase shares of common stock, series A warrants to purchase up to 2,466,368 shares of common stock, series B warrants to purchase up to 2,466,368 shares of common stock, and placement agent warrants. The combined purchase price for the securities was $2.23 per share of common stock (or pre-funded warrant in lieu thereof). Each pre-funded warrant is exercisable for one share of common stock at an exercise price of $0.001 per share. The pre-funded warrants are exercisable immediately and may be exercised at any time until all of the pre-funded warrants are exercised in full, subject to the beneficial ownership limitation. Each common warrant has an exercise price of $2.23 per share and will be exercisable beginning on the effective date of shareholder approval. The series A warrants expire on the earlier of (i) two years from the initial exercise date, or (ii) 60 days from the Company's public announcement that it has achieved the series A milestone event. The series B warrants expire on the earlier of (i) five years from the initial exercise date, or (ii) six months from the Company's public announcement that it has achieved the series B milestone event. The series A milestone event means the Company releases interim data for the first subject group from the MIRACLE trial whereby the complete remission rate for either dose of the Company's study drug is greater than placebo; and series B milestone event means the Company releases final topline data from the MIRACLE trial and documented a statistically significant improvement in the primary efficacy endpoint. In addition, in August 2024, the Company entered into a warrant amendment agreement, pursuant to which the Company agreed that effective upon closing of the offering, and subject to shareholder approval, to amend 895,834 existing warrants originally issued on December 26, 2023 at an exercise price of $9.60 per share and a termination date of February 14, 2029, so that the amended warrants would have a reduced exercise price of $2.23 per share and would expire five years from the date of shareholder approval. The Company calculated the valuation of the warrant amendment immediately prior to the offering, as well as the valuation of the warrant amendment with the repriced terms, and a 91% probability of obtaining shareholder approval. The loss on modification of the warrants of $0.4 million was recorded as a loss on issuance of warrant liabilities during the year ended December 31, 2024. In October 2024, the Company’s shareholders approved the issuance of both the August 2024 warrants, as well as the warrant amendment. The Company received gross proceeds of $5.5 million, before deducting the placement agent's fees and other offering expenses payable by the Company. Proceeds of offerings are allocated between common shares and warrants first by allocating to the warrants classified as a liability based on their fair value and then allocating the residual to the equity instruments, which would include pre-funded warrants. As the fair value of the liability classified warrants in the August 2024 offering exceeded the total proceeds, no consideration was allocated to the Common Shares or Pre-Funded Warrants. The full proceeds of the August 2024 offering were recorded to warrant liabilities, with an initial liability of $6.1 million, and a loss on initial recognition of $0.8 million. Transaction costs related to the offering were correspondingly fully allocated to warrant liabilities, and $1.0 million in related transaction costs were expensed for the year ended December 31, 2024. In February 2025, the warrants associated with the August 2024 agreement were exercised in full as part of the warrant inducement, as discussed above.

Other Components of Equity

During the three months ended March 31, 2025, all remaining pre-funded warrants were exercised, leaving no remaining pre-funded warrants outstanding as of March 31, 2025. In March 2024, the Company issued 6,834 shares of common stock to consultants in exchange for services to be provided.

Liability Classified Warrants

The Company uses the Black-Scholes option pricing model (BSM) to determine the fair value of its warrants at the date of issue and outstanding at each reporting date. The risk-free interest rate assumption is based upon observed interest rates on zero coupon US Treasury bonds linearly interpolated to obtain a maturity period commensurate with the term of the warrants. Estimated volatility is a measure of the amount by which the Company's stock price is expected to fluctuate each year during the expected life of the warrants.

The assumptions used in determining the fair value of the Company's outstanding liability classified warrants are as follows:

	March 31, 2025	December 31, 2024
Risk-free interest rate	3.9% to 4.3%	4.2% to 4.4%
Volatility	101.3% to 246.1%	76.9% to 99.4%%
Expected life (years)	0.4 to 4.9	0.6 to 4.8
Dividend yield	—%	—%

A summary of the Company's liability classified warrant activity during the three months ended March 31, 2025 and related information follows:

	Number of Shares Under Warrant	Range of Warrant Exercise Price per Share		Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (Years)
Balance at January 1, 2025	6,063,040	$ 2.23	$ 94.50	$ 3.32	3.5
Granted	18,654,178	$ 0.75	$ 1.34	$ 0.88	—
Exercised	(5,828,570)	$ 1.00	$ 1.00	1.00	—
Balance at March 31, 2025	18,888,648	$ 2.79	$ 94.50	$ 1.24	4.9
Exercisable at March 31, 2025	12,346,590	$ 0.75	$ 94.50	$ 1.33	4.8

For a summary of the changes in fair value associated with the Company's warrant liability for the three months ended March 31, 2025, see Note 2 - Basis of presentation, principles of consolidation and significant accounting policies - Fair Value of Financial Instruments.

Equity Classified Warrants

In January 2025, the Company granted equity-classified warrants to two consultants to purchase up to 50,000 shares each of Company common stock with a ten-year term and an exercise price of $1.64. The first 50,000 of these warrants vest based on performance of certain services, and the other 50,000 vest annually over four years.

In October 2024, the Company issued consultants ten-year warrants to purchase up to 36,000 shares of common stock. 30,000 warrants vest annually over a four-year term, 5,000 warrants vest monthly over a three-year term, and 1,000 warrants vested immediately.

In March 2024, the Company granted equity-classified warrants to purchase up to 3,334 shares of Company common stock with a ten-year term and an exercise price of $9.15. The warrants vest annually over four years while services are being performed.

At March 31, 2025, the Company had 197,993 equity classified warrants outstanding and 50,512 warrants were exercisable. At December 31, 2024, the Company had 1,746,993 equity classified warrants outstanding and 1,697,744 warrants were exercisable.

5. Stock Based Compensation

As of March 31, 2025, there were 119,116 shares remaining to be issued under the Company's equity compensation plans.

Stock-based compensation expense for the three months ended March 31, 2025 and 2024, respectively, is as follows (table in thousands):

	Three Months Ended March 31,	
	2025	2024
General and administrative	$ 365	$ 381
Research and development	120	112
Total stock-based compensation expense	$ 485	$ 493

The Company recorded stock compensation expense for the equity classified warrants relating to non-employee consulting agreements of $28,000 and $34,000 for the three months ended March 31, 2025 and 2024, respectively, which are included in the table above. At March 31, 2025, there was $348,000 of unrecognized stock compensation expense related to the Company's equity classified warrants.

6. Income Taxes

Deferred income tax assets and liabilities are determined based upon differences between the financial reporting and tax basis of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse.

The Company does not expect to pay any significant federal, state, or foreign income taxes in 2025 as a result of the losses recorded during the three months ended March 31, 2025 and the additional losses expected for the remainder of 2025 and cumulative net operating loss carryforwards. Accounting standards require the consideration of a valuation allowance for deferred tax assets if it is “more likely than not” that some component or all of the benefits of deferred tax assets will not be realized. As a result, as of March 31, 2025 and December 31, 2024 the Company maintained a full valuation allowance for all deferred tax assets.

The Company recorded no income tax provision for the three months ended March 31, 2025 and 2024, respectively. The effective tax rate for the three months ended March 31, 2025 and 2024 is nil. The income tax rates vary from the federal and state statutory rates primarily due to the change in fair value of the stock warrants, Internal Revenue Code Section 162(m) limitations and ISO activity, as well as the valuation allowances on the Company’s deferred tax assets. The Company estimates its annual effective tax rate at the end of each quarterly period. Jurisdictions with a projected loss for the year where no tax benefit can be recognized due to the valuation allowance could result in a higher or lower effective tax rate during a particular quarter depending on the mix and timing of actual earnings versus annual projections.

7. Commitments and Contingencies

In addition to the commitments and contingencies described elsewhere in these notes, see below for a discussion of the Company's commitments and contingencies as of March 31, 2025.

Lease Obligations Payable

The following summarizes quantitative information about the Company's operating leases for the three months ended March 31, 2025 and 2024, respectively (table in thousands):

	Three Months Ended March 31,	
	2025	2024
Lease cost:		
Operating lease cost	$ 38	$ 38
Variable lease cost	7	2
Total	$ 45	$ 40

In September 2023, the Company executed an amendment to extend the corporate office lease until August 31, 2029, with an option to renew. The Company is required to remit base monthly rent of approximately $4,700 which will increase at an average approximate rate of 2% each year. The Company is also required to pay additional rent in the form of its pro-rata share of certain specified operating expenses of the building.

In June 2022, the Company extended the lab lease until September 30, 2027, with no further right or option to renew. The Company recorded approximately $12,000 in sublease income from a related party for the three months ended March 31, 2025 and 2024. Sublease income is recorded as other income, net on the Company's condensed consolidated statement of operations and comprehensive loss. Operating cash flows from operating leases was $39,000 and $29,000 for the three months ended March 31, 2025 and 2024, respectively.

In March 2025, the Company terminated the WP1122 license with MD Anderson. The upcoming annual maintenance fee on this license was previously expensed and accrued, as the annual fee is due annually in April.

Licenses

MD Anderson - Total expenses related to the Company's license agreements with MD Anderson were $50,000 and $54,000 for the three months ended March 31, 2025 and 2024, respectively.

HPI - The Company has two agreements with a related party, Houston Pharmaceuticals, Inc. (HPI) with total expenses of $59,000 for each of the three months ended March 31, 2025 and 2024, respectively.

Sponsored Research Agreements - The expenses recognized under the agreements were $261,000 and $156,000 for the three months ended March 31, 2025 and 2024, respectively.

8. Subsequent Events

In addition to the subsequent events discussed elsewhere in these notes, no other subsequent events were noted as occurring after March 31, 2025.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

This Form 10-Q, including the Management's Discussion and Analysis of Financial Condition and Results of Operations, contains certain forward-looking statements. Historical results may not indicate future performance. Our forward-looking statements reflect our current views about future events, are based on assumptions and are subject to known and unknown risks and uncertainties that could cause actual results to differ materially from those contemplated by these statements.

Forward-looking statements include, but are not limited to, statements about:

- Our ability to continue our relationship with the University of Texas MD Anderson Cancer Center (MD Anderson), including, but not limited to, our ability to maintain current licenses and license future intellectual property resulting from our sponsored research agreements with MD Anderson;
- The success or the lack thereof, including the ability to recruit subjects on a timely basis, for a variety of reasons, of our clinical trials through all phases of clinical development;
- Our ability to satisfy any requirements imposed by the US Food & Drug Administration (FDA) (or its foreign equivalents) as a condition of our clinical trials proceeding or beginning as planned;
- World-wide events including the wars in Ukraine and in the Middle East, the COVID-19 pandemic, and the general supply chain shortages effects on our clinical trials, clinical drug candidate supplies, preclinical activities and our ability to raise future financing;
- Our ability to obtain additional funding to commence or continue our clinical trials, fund operations and develop our product candidates;
- The need to obtain and retain regulatory approval of our drug candidates, both in the United States and in Europe, and in countries deemed necessary for future trials;
- Our ability to complete our clinical trials in a timely fashion in line with our stated milestones and within our expected budget and resources;
- Our ability to maintain compliance with the continued listing requirements of the Nasdaq Capital Market;
- Our ability to source our drug products at reasonable prices;
- Compliance with obligations under intellectual property licenses with third parties;
- Any delays in regulatory review and approval of drug candidates in clinical development;
- Potential efficacy of our drug candidates;
- Our ability to commercialize our drug candidates;
- Market acceptance of our drug candidates;
- Competition from existing therapies or new therapies that may emerge;
- Potential product liability claims;
- Our dependency on third-party manufacturers to successfully, and timely, supply or manufacture our drug candidates for our preclinical work and our clinical trials;
- Our ability to establish or maintain collaborations, licensing or other arrangements;
- Our ability and third parties' abilities to protect intellectual property rights;
- Our ability to adequately support future growth; and
- Our ability to attract and retain key personnel to manage our business effectively.

We undertake no obligation to publicly update or revise any forward-looking statements, including any changes that might result from any facts, events, or circumstances after the date hereof that may bear upon forward-looking statements. Furthermore, we cannot guarantee future results, events, levels of activity, performance, or achievements.

Our Business

We are a late-stage pharmaceutical development company currently conducting a pivotal Phase 3 trial evaluating Annamycin (also known by its non-proprietary name "naxtarubicin") in combination with Cytarabine for the treatment of subjects with relapsed/refractory (R/R) acute myeloid leukemia (AML). This Phase 3 trial should have an interim unblinding of data by the end of 2025, less than a year from its commencement, and an additional unblinding in the first half of 2026. We believe such early visibility for a pivotal registration-enabling trial is highly unique in that stakeholders will receive preliminary safety and efficacy data in the "MIRACLE" trial (derived from Moleculin R/R AML AnnAraC Clinical Evaluation) within one year of dosing the first subject. Additionally, we have two portfolios of technologies for hard-to-treat cancers and viruses with clinical and preclinical research funded by investigators at academic institutions.

Each of our three core technologies is based substantially on discoveries made at and licensed from MD Anderson in Houston, Texas, and features one or more drugs that have successfully completed a Phase 1 clinical trial. Three of our six drug candidates have shown human activity in clinical trials and are currently or have been in Phase 1B/2 or Phase 2 clinical trials. One Phase 2B/3 trials is currently underway. Since our inception, our drugs have completed, are currently in, or have been permitted to proceed in, fourteen clinical trials. Annamycin is in a class of drugs referred to as Anthracyclines, which are inhibitors of topoisomerase II, enabling them to cause DNA damage in rapidly replicating tumor cells. Annamycin, in a unique multilamellar lipid formulation, is our lead molecule and we have recently concluded treating subjects in one Phase 1B/2 clinical trial for treating Acute Myeloid Leukemia (AML) and are embarking on a Phase 3 clinical trial for the treatment of AML, which we believe will be pivotal. Annamycin has also been in two Phase 1B/2 clinical trials for treating Soft Tissue Sarcoma metastasized to the lungs (STS lung metastases, STS lung mets, or Advanced STS). Our Phase 1B/2 STS lung mets trial MB-107 is completed, and a clinical study report has been issued. The other trial is an investigator initiated Advanced STS trial which is closed to recruitment.

One of our core management beliefs is that anthracyclines represent one of the most important treatments for AML and Advanced STS, and we believe Annamycin may, for the first time ever, allow a majority of these patients to benefit from this treatment. We believe that such a benefit could be disruptive to the competitive landscape for these markets. This belief, coupled with our limited resources, leads us to currently focus mainly on the development of Annamycin. We intend to advance our other drug candidates via investigator led studies – both clinically and preclinically.

Focus and Core Technologies

Our core technologies consist of the following programs:

a) Annamycin or L-Annamycin is a “next generation” anthracycline (one of the most widely used classes of chemotherapy), designed to be different than currently approved anthracyclines, which are limited in utility because of cardiotoxicity risks and their susceptibility to multidrug resistance mechanisms. Annamycin was designed to avoid multidrug resistance and to be non-cardiotoxic and, with intensive cardiac monitoring, has shown no cardiotoxicity in subjects treated in our five Annamycin clinical trials to date. Furthermore, we have demonstrated safe dosing significantly beyond the lifetime dose limitations imposed by regulatory authorities upon commonly prescribed anthracyclines due to their inherent cardiotoxicity.

b) Our WP1066 Portfolio includes WP1066, WP1193 and WP1220, three of several Immune/Transcription Modulators in the portfolio designed to inhibit p-STAT3 (phosphorylated signal transducer and activator of transcription 3) among other transcription factors associated with tumor activity. These also stimulate a natural immune response to tumors by inhibiting the errant activity of Regulatory T-Cells (TRegs).

c) Our WP1122 Portfolio contains compounds (including WP1122, WP1096, and WP1097) designed to exploit the potential uses of inhibitors of glycolysis such as 2-deoxy-D-glucose (2-DG). We believe such compounds may provide an opportunity to cut off the energy supply of tumors by taking advantage of their high degree of dependence on glucose in comparison to healthy cells, as well as viruses that also depend upon glycolysis and glycosylation to infect and replicate.

Annamycin and the Lack of Cardiotoxicity

As part of our Annamycin clinical trials, we have engaged an independent expert at the Cleveland Clinic to assess cardiotoxicity associated with chemotherapy (Expert or Independent Expert). The data made available to the Expert include left ventricular ejection fraction (LVEF) as determined by echocardiograms, and ECHO strain imaging, as well as serum Troponin levels (a biochemical marker of acute heart damage). “ECHO strain imaging” is a method in echocardiography (medical ultrasound) for measuring regional or global deformation (contraction or beating) of the myocardium (heart muscle). By strain rate imaging, the simultaneous function of different regions can be displayed and measured. Cardiac health biomarkers such as blood Troponin levels are considered an indicator of potential long-term heart damage. The Expert issued periodic reports during our MB-106 clinical trial and will also issue updated reports after each unblinding in the Phase 2B portions of the MIRACLE trial. Such data from clinical trials where a clinical study report has not yet been issued include some data which are preliminary and subject to change.

We received several independent assessments for the absence of cardiotoxicity in subjects treated with Annamycin. We now have independent assessments covering 84 subjects that have been treated with Annamycin in five different clinical trials in the U.S. and Europe with no evidence of cardiotoxicity. To date of the 77 subjects treated in our internally funded trials, 56 were treated above the FDA’s lifetime maximum anthracycline limit of 550 mg/m^2, including one subject whose repeated Annamycin treatments took that subject to a total cumulative anthracycline exposure of 3,420 mg/m^2 (or roughly five times the FDA approved lifetime anthracycline exposure) and there has been no evidence of cardiotoxicity reported. After review of the data provided, the Independent Expert, in their most recent report and as stated in previous reports, concluded that there was no evidence of drug-related cardiotoxicity in any subjects.

We believe the Expert's reports are particularly relevant in light of a recently published retrospective study showing that the incidence of heart failure more than doubles for cancer patients treated with anthracyclines compared to cancer patients not receiving anthracyclines (C Larson, et al. Anthracycline and Heart Failure in Patients Treated for Breast Cancer or Lymphoma, 1985-2010. JAMA Network Open. 2023;6(2):e2254669. doi:10.1001/jamanetworkopen.2022.54669). Given the heart-damaging impact of prior treatment with currently prescribed anthracyclines, and considering that the subject population that we are enrolling in our Annamycin trials (multiple prior therapies, including anthracyclines known to be cardiotoxic, many elderly, and other comorbidities) we believe that there is a high likelihood that a cardiac event will eventually occur in the future that we will not be able to disassociate from Annamycin. We believe that the potential for such future incidences, however, does not outweigh the significant lack of cardiotoxicity to date as reflected in the Expert’s reports.

Although we have not definitively concluded that Annamycin is incapable of cardiotoxicity, we discuss Annamycin’s lack of demonstrated cardiotoxicity in this document, corporate presentations and other public communications. Such discussions reflect the information in the preceding paragraphs but in summary are based on the following: 1) Annamycin was initially designed to be non-cardiotoxic; 2) Preclinical studies have demonstrated Annamycin lacks cardiotoxicity as compared to a currently prescribed anthracycline; and, 3) Our Expert’s conclusions from analyzing the data from 84 subjects treated with Annamycin in five clinical studies conducted in the US and in Europe. Our discussions will reflect any additional data or analyses as they become

available.

Clinical Trials Summary

We have multiple active INDs/CTAs ("Investigational New Drug" authorization in the US or "Clinical Trial Authorization" in Europe). These INDs/CTAs are under development, approved, in progress, or completed and comprise a total of fourteen clinical trials, internally and externally funded. With Annamycin, we currently have active two AML clinical trials: MB-106 which is a Phase 1B/2 treating AML with AnnAraC (recruitment is closed and this trial is now in subject follow-up) and MB-108 which is a Phase 2B/3 pivotal clinical trial treating R/R AML as 2nd line therapy (recruitment has started and additional sites are being added). Additionally, there is one externally funded Phase 1B/2 trial treating STS Lung Mets with Annamycin as monotherapy. This trial is closed and is in follow-up on the trial's subjects. With WP1066, we have an externally funded Phase 1B/2 trial in combination with radiation treating GBM at Northwestern University that is actively recruiting.

MIRACLE Trial

We have a Phase 3 pivotal trial for the treatment of AML patients who are R/R after induction therapy with Annamycin in combination with Cytarabine. This Phase 3 "MIRACLE" trial is a global study. It is an adaptive trial designed with a lead-in Part A portion of the study having three arms (control arm with cytarabine, and two test arms with cytarabine plus two different doses of Annamycin) intended to determine an "optimum dose" to be used in Part B of the study. Once an optimum dose for the Annamycin is determined the study will continue into Part B with two arms (control arm with cytarabine and a test arm with cytarabine plus Annamycin). In some contexts, we refer to Part A as Phase 2B and Part B as Phase 3, however the adaptive design enables the combining of data from Part A (for the optimum dose) with Part B such that data from both parts A and B will comprise Phase 3 data.

Recent Business Developments

Annamycin

Miracle Trial

Clinical and Regulatory

As of April 30, 2025, we have selected 38 sites to conduct the MIRACLE trial in the US, Europe and the Middle East/Africa (MENA) for the MIRACLE trial with one site in Ukraine actively treating subjects. Besides the one site in Ukraine, we have contracted with two other sites in Georgia and Romania.

In November 2024, we amended our existing US investigational new drug application or IND for inclusion of the MIRACLE trial protocol. In the amendment with the new MIRACLE protocol, the trial will allow, for the first time in the US for AML subjects, dosing above the lifetime maximum allowable dose for currently prescribed anthracyclines. Then in February 2025 we received FDA feedback and guidance on that amendment. Such feedback allowed a reduction in the size of our Part B of the Phase 3 pivotal trial protocol to 222. Guidance from FDA included a recommendation to alter the statistical plan that reduced the initially proposed size of Part B of our trial by approximately 10%. Moreover, the nature of the feedback helps us move forward quickly to open sites in the US, in addition to the non-US sites we are expecting to open. Any reduction in recruitment helps to shorten the time to completion of the trial.

In February through April of 2025, we received a total of five separate communications from the FDA including additional comments and information requests, all of which we believe we have adequately addressed. These requests focused mainly on safety, subject monitoring, clinical pharmacology, and inclusion/exclusion criteria. None of the requests focused on the overall trial design or dosing of Annamycin. Our last response was submitted on April 18, 2025 and we have not received follow-up communication since that time. However, we cannot be assured that our responses will be adequate for the FDA to continue to allow the amended IND to proceed, or that there will not be additional requests for information. Because we are amending an existing IND, there is no required time for the FDA to respond to our submissions, but neither is a positive FDA response required for us to proceed with the MIRACLE trial. At this time, we will proceed with the MIRACLE trial, as amended, in the US. As with all clinical trials, if at any time the FDA believes there is a safety issue that merits it, the agency may put the MIRACLE trial on clinical hold.

Moleculin Receives European Medicines Agency Approval to Expand Phase 3 MIRACLE Clinical Trial

On May 12, 2025, we announced that the European Medicines Agency (EMA) approved its Clinical Trial Application to conduct its MIRACLE trial in all nine countries submitted in the European Union (EU). We received the final Report for the Application and Evaluation Assessment (part of the EMA's Clinical Trial Information System or CTIS process) of "Acceptable" for Belgium, Czechia, France, Germany, Italy, Lithuania, Poland, Romania, and Spain. Such approval was under the condition that we present results of appropriate nonclinical GLP studies before initiating the Phase 3 portion (Part B) of the MIRACLE study. Such results will be submitted as a substantial modification. Along with the individual country committee and/or ethics approvals for these nine countries in the EU allows us to proceed. While there are minor differences between the US and EU protocols with the FDA and EMA, respectively, we do not view these as a barrier to conducting the study and are working to harmonize the protocols as appropriate.

MB-107 Annamycin in Monotherapy for the Treatment of STS Lung Mets

We plan on hosting a Key Opinion Leader (KOL) call announcing and reviewing the final top line data from the MB-107 trial in May or early June. Originally scheduled for April, we had to delay due to KOL schedules and availability. We remain positive regarding the data.

Scientific Presentations of Preclinical Data

AACR Presentation of Pre-Clinical Data for Annamycin Market Expansion Potential, including Pancreatic Cancer

We announced on April 29, 2025, that new pre-clinical data for Annamycin demonstrating market expansion potential including treatment for pancreatic cancer was presented at the American Association for Cancer Research (AACR) Annual Meeting in Chicago, IL. With five previous or current investigator-initiated clinical trials supporting development of our drug candidates, we believe that our next investigator-initiated trials could be Annamycin for the treatment of pancreatic cancer or advanced soft tissue sarcomas.

The study, presented in poster form, was designed to assess the efficacy of Annamycin in combination with approved anticancer agents in order to identify novel potentially highly efficacious clinical applications of Annamycin alone and with a therapeutic partner. Annamycin in its non-liposomal form (free drug; *in vitro*) and Liposomal Annamycin (L-ANN; *in vivo*) were tested in combination with selected FDA approved drugs. Several of the most efficacious drug combinations from the *in vitro* studies were then tested using well developed *in vivo* models of leukemia and solid tumors, including sarcoma and pancreatic cancer. It should be noted that in a separate set of previous experiments, Annamycin activity was tested *in vitro*, and appeared to be highly active, against drug resistant cell lines, including cells resistant to cytarabine and venetoclax.

WP1066

Clinical Trial with WP1066 at Northwestern University

With our WP1066 oral formula, an externally funded Phase 1B/2 trial in combination with radiation treating glioblastoma (GBM), a form of brain cancer, is recruiting and treating subjects at Northwestern University (Northwestern). This is an investigator-initiated trial where our main cost is supplying drug product. To date Northwestern has recruited and treated 7 subjects. No data has been released.

Preclinical Studies with WP1066 IV Formula at Emory University

We have signed an agreement with Emory University whereby Emory will study various WP1066 IV formulations in preclinical studies with the goal of selecting the best molecule to move into a clinical setting towards, most likely, brain cancers such as GBM. Study drug was delivered in April 2025 to Emory with results from such studies expected in the second half of 2025.

Intellectual Property, Licenses and Sponsored Research

World Health Organization Approval of "naxtarubicin" as International Non-Proprietary Name for Annamycin

We announced on May 6, 2025 that the International Nonproprietary Names (INN) Expert Committee of the World Health Organization approved "naxtarubicin[1]" for the non-proprietary name of the Company's next-generation anthracycline in development, Annamycin. With this INN now given and prior approval by the United States Adopted Names (USAN), we have the ability to establish a universally recognized and conflict-free nonproprietary drug name for Annamycin. This is considered the last step of approvals for non-proprietary names. The use of this name will be merged into our public and clinical documents in the near-term.

Commonly referred to as a generic name, each INN is a unique name used to identify pharmaceutical substances or active pharmaceutical ingredients. Each active substance that is to be marketed as a pharmaceutical must be granted a unique name of worldwide acceptability to ensure the clear identification, safe prescription and dispensing of medicines to patients. Nonproprietary names are intended for wide use ranging from labelling and product information to drug regulation and scientific literature.

Additional Patents Issued for Annamycin in the US

On May 5, 2025, we announced that the U.S. Patent and Trademark Office (USPTO) granted two additional U.S. patents with claims covering Annamycin. U.S. patent number 12,257,261 titled, "*Preparation of Preliposomal Annamycin Lyophilizate*", has claims covering methods of making liposomal Annamycin and U.S. patent 12,257,262 titled "*Method of Reconstituting Liposomal Annamycin*", has claims covering methods of making liposomal Annamycin suspension. Both patents have a base patent term currently extending until June 2040, subject to adjustment for delays in prosecution and extension to account for time required to fulfill requirements for regulatory approval. Moleculin has additional patent applications related to Annamycin pending in the U.S., Europe and in major jurisdictions worldwide.

Licenses and Sponsored Research with MD Anderson

We have terminated certain licenses related to WP1122 with MD Anderson and are in discussions to execute an option or options on these technologies along with additional technologies where the term of such options will be tied to the term of our Sponsored Research Agreement with MD Anderson. Such actions are in line with our efforts to focus our resources on the development of Annamycin.

[1] WHO Drug Information, Vol. 39, No. 1, 2025, pg. 217

Results of Operations

The following table sets forth, for the periods indicated, data derived from our statement of operations (table in thousands) and such changes in the periods are discussed below in approximate amounts:

Moleculin Biotech, Inc.
Condensed Consolidated Statements of Operations
(Unaudited)

	Three Months Ended March 31,	
	2025	**2024**
Revenues	$ —	$ —
Operating expenses:		
Research and development	3,435	4,252
General and administrative	2,477	2,393
Depreciation and amortization	31	32
Total operating expenses	5,943	6,677
Loss from operations	(5,943)	(6,677)
Other income (loss):		
Gain from change in fair value of warrant liability	9,054	1,455
Transaction costs allocated to warrant liabilities	(1,788)	—
Loss on issuance of warrant liabilities	(7,798)	—
Other income, net	9	11
Interest income, net	30	241
Net loss	$ (6,436)	$ (4,970)

Three Months Ended March 31, 2025 Compared to Three Months Ended March 31, 2024

Research and Development Expense. Research and development (R&D) expense was $3.4 million and $4.3 million for the three months ended March 31, 2025 and 2024, respectively. The decrease of $0.9 million is mainly related to the clinical trials activity levels.

General and Administrative Expense. General and administrative expense was $2.5 million and $2.4 million for the three months ended March 31, 2025 and 2024, respectively. The increase of $0.1 million is mainly related to a slight overall increase in regulatory and legal fees.

Gain from Change in Fair Value of Warrant Liability. We recorded a net gain of $9.1 million in the first quarter of 2025 as compared to a net gain of $1.5 million in the first quarter of 2024, for the change in fair value on revaluation of our warrant liability associated with our warrants issued in conjunction with certain of our previous stock offerings. We are required to revalue our liability-classified warrants at the time of each warrant exercise, if applicable, and at the end of each reporting period and reflect in the statement of operations a gain or loss from the change in fair value of the warrant in the period in which the change occurred. We calculated the fair value of the warrants outstanding using the Black-Scholes model. A gain results principally from a decline in our share price during the period and a loss results principally from an increase in our share price.

Transaction costs allocated to warrant liabilities and Loss on issuance of warrant liabilities. Proceeds of offerings are allocated between common shares and warrants first by allocating to the warrants classified as a liability based on their fair value and then allocating the residual to the equity instruments, which would include pre-funded warrants. As the fair value of the liability classified warrants in the February 2025 offerings exceeded the total proceeds, no consideration was allocated to the Common Shares or Pre-Funded Warrants. The full proceeds of the February 2025 offerings were recorded to warrant liabilities, with an initial liability of $19.0 million, and a loss on initial recognition of $7.8 million. Transaction costs related to the offering were correspondingly fully allocated to warrant liabilities, and $1.8 million in related transaction costs were expensed during the three months ended March 31, 2025.

Interest income, net. Interest income, net decreased by approximately $0.2 million for the comparable quarterly periods due to a decreasing cash balance and decreasing interest rates during the past year.

Liquidity and Capital Resources

The following table sets forth our primary sources and uses of cash for the period indicated (table in thousands):

	Three Months Ended March 31,	
	2025	2024
Net cash used in operating activities	$ (4,564)	$ (6,717)
Net cash provided by financing activities	7,999	—
Effect of exchange rate changes on cash and cash equivalents	3	(9)
Net increase (decrease) in cash and cash equivalents	$ 3,438	$ (6,726)

As of March 31, 2025, there was $0.6 million of cash on hand in a bank account in Australia and we know of no related limitations impacting our liquidity in Australia.

Cash used in operating activities

Cash used in operations was $4.6 million for the three months ended March 31, 2025. This $2.1 million decrease over the prior year period of $6.7 million was primarily due to the timing of costs incurred and associated payments for drug production and clinical trial expenses.

Cash provided by financing activities

On February 25, 2025, the Company entered into a securities purchase agreement with an institutional investor for the sale by the Company of 1,150,000 shares of common stock, and 2,121,029 pre-funded warrants to purchase shares of common stock, and series D warrants to purchase up to 6,543,058 shares of common stock. The combined purchase price for the securities was $1.07 per share of common stock (or pre-funded warrant in lieu thereof). Each pre-funded warrant is exercisable for one share of common stock at an exercise price of $0.001 per share. The pre-funded warrants are exercisable immediately and may be exercised at any time until all of the pre-funded warrants are exercised in full, subject to the beneficial ownership limitation. Each common warrant will be exercisable upon the receipt of shareholder approval, will have an exercise price of $1.07 per share, and expire five years from the initial exercise date. The Company received gross proceeds of $3.5 million.

On February 13, 2025, the Company entered into a warrant exercise inducement offer letter with a holder of certain existing warrants to receive new warrants to purchase up to a number of shares of common stock equal to 200% of the number of warrant shares issued pursuant to the exercise of such existing warrants to purchase up to 5,828,570 shares of common stock (series C warrants) pursuant to which the Holder agreed to exercise for cash their existing warrants at a reduced exercise price of $1.00 in exchange for the Company's agreement to issue the inducement warrants to purchase up to 11,657,140 shares of the Company's common stock. Each inducement warrant will have an exercise price of $0.75, and will be exercisable as of the date of issuance and may be exercised for a period of five years therefrom. The Company received gross proceeds of $5.8 million. This brings the total gross proceeds received in February 2025 to $9.3 million.

On August 19, 2024, we announced the closing of our previously announced public offering of 283,000 shares of common stock and 2,183,368 pre-funded warrants to purchase shares of common stock, Series A warrants to purchase up to 2,466,368 shares of common stock and Series B warrants to purchase up to 2,466,368 shares of common stock, at a combined public offering price of $2.23 per share (or per pre-funded warrant in lieu thereof) and accompanying warrants. We received gross proceeds of $5.5 million, before deducting the placement agent's fees and other offering expenses.

We believe that our cash on hand and cash equivalents as of March 31, 2025, is sufficient to fund our planned operations into the third quarter of 2025. This takes into account cash outlays for preparations for clinical trials beyond the current active trials. The continuation of our Company as a going concern is dependent upon our ability to obtain necessary financing to continue operations and the attainment of profitable operations. We must seek additional funding of approximately $15 million to support MIRACLE and our operations into the first quarter of 2026 through a combination of equity offerings, debt financings, government or other third-party funding, commercialization, marketing and distribution arrangements, other collaborations, strategic alliances and licensing arrangements and delay planned cash outlays or a combination thereof to continue our operations in the near term. We cannot provide assurance that such events or a combination thereof can be achieved.

In March 2022, we received a subpoena from the SEC requesting information and documents, including materials related to certain individuals (none of which are our officers or directors) and entities, and materials related to the development of and statements regarding our drug candidate for the treatment of COVID-19. We have received, and expect to continue to receive, periodic further requests from the SEC staff with respect to this matter. We are not aware of the specific nature of the underlying investigation by the SEC, and to the extent that this investigation relates to prior public disclosures that we have made, we believe in the accuracy and adequacy of such prior disclosures. The correspondence from the SEC transmitting the subpoena to us states that the SEC is trying to determine whether there have been any violations of federal securities laws, but that its investigation does not mean that the SEC has concluded that anyone has violated the law or that the SEC has a negative opinion of any person, entity, or security. We cannot predict when this matter will be resolved or what, if any, action the SEC may take following the conclusion of the investigation. We expensed approximate ly $0.02 million and $0.1 million in related general and administrative fees and expenses for the three months ended March 31, 2025 and 2024 , respectively.

Critical Accounting Policies and Significant Judgments and Estimates

There have been no material changes to our critical accounting policies and use of estimates from those disclosed in our Form 10-K for the year ended December 31, 2024. For a discussion of our critical accounting policies and use of estimates, refer to Management's Discussion and Analysis of Financial Condition and Results of Operations – Critical Accounting Policies and Significant Estimates in Part II, Item 7 of our Annual Report on Form 10-K for the year ended December 31, 2024.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISKS

Not applicable as we are a smaller reporting company.

ITEM 4. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

We maintain disclosure controls and procedures designed to ensure that material information required to be disclosed in our filings under the Securities Exchange Act of 1934, as amended, is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and that material information is accumulated and communicated to our management, including our Chief Executive Officer (CEO), who is our principal executive officer, and Chief Financial Officer (CFO), who is our principal financial and accounting officer, as appropriate, to allow timely decisions regarding required disclosures. Our CEO and CFO have evaluated these disclosure controls and procedures as of the end of the period covered by this quarterly report on Form 10-Q and have determined that such disclosure controls and procedures were effective as of March 31, 2025.

Changes in Internal Control Over Financial Reporting

There was no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15-d-15(f) under the Exchange Act) during the three months ended March 31, 2025 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II – OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

None.

ITEM 1A. RISK FACTORS

For information regarding factors that could affect our results of operations, financial condition and liquidity, refer to the section entitled "Risk Factors" in Part I, Item 1A in our annual report on Form 10-K for the year ended December 31, 2024. There have been no material changes from the risk factors previously disclosed in our annual report on Form 10-K for the year ended December 31, 2024, as filed with the SEC.

ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

None.

ITEM 3. DEFAULTS UPON SENIOR SECURITIES

None.

ITEM 4. MINE SAFETY DISCLOSURE

Not applicable.

ITEM 5. OTHER INFORMATION.

During the period covered by this Quarterly Report, none of the Company's directors or executive officers has adopted or terminated a Rule 10b5-1 trading arrangement or a non-Rule 10b5-1 trading arrangement (each as defined in Item 408 of Regulation S-K under the Securities Exchange Act of 1934, as amended).

During the quarter ended March 31, 2025, we terminated certain licenses related to WP1122 with MD Anderson and are in discussions to execute an option or options on these technologies along with additional technologies where the term of such options will be tied to the term of our Sponsored Research Agreement with MD Anderson. Such actions are in line with our efforts to focus our resources on the development of Annamycin. The terminated license agreements consist of: (i) the Patent and Technology License Agreement dated April 2, 2012 by and between The Board of Regents of the University of Texas System and IntertechBio Corporation, as amended; (ii) the Patent And Technology License Agreement dated December 3, 2021 by and between The Board of Regents of The University Of Texas System on behalf of The University Of Texas M. D. Anderson Cancer Center and Moleculin Biotech, Inc.; and (iii) Patent and Technology License Agreement dated October 21, 2022 by and between The Board of The University Of Texas System on behalf of The University Of Texas M.D. Anderson Cancer Center and Moleculin Biotech, Inc.

On November 4, 2024, the Compensation Committee of the Board of Directors took the following actions in connection with the executive compensation for the 2023/2024 compensation year (June 1, 2023 to May 31, 2024) with its named executive officers (Walter Klemp, President and Chief Executive Officer; Jonathan P. Foster, Executive Vice President and Chief Financial Officer; and Dr. Donald Picker, Chief Scientific Officer): (i) cash bonuses in the aggregate amount of $735,000 were granted based on the full achievement of the goals and objectives for the compensation year, however the payment of the bonuses was accrued and will be paid the earlier of a) 364 days or b) approval by the CEO after consultation with the Board of Directors; and (ii) the Compensation Committee agreed that the accrued bonuses will earn interest at a rate of 8% per annum. In April 2025, the Company paid 50% of the executive bonuses and accrued interest from the 2023/2024 compensation year (June 1, 2023 to May 31, 2024).

ITEM 6. EXHIBITS

Exhibit No.	Description
4.1	Form of Inducement Warrant (incorporated by reference to Exhibit 4.1 of the Form 8-K filed February 13, 2025)
4.2	Form of Pre-Funded Warrant in February 2025 offering (incorporated by reference to Exhibit 4.1 of the Form 8-K filed February 26, 2025)
4.3	Form of Common Warrant in February 2025 offering (incorporated by reference to Exhibit 4.2 of the Form 8-K filed February 26, 2025)
10.1	Form of Waiver agreement dated February 9, 2025 (incorporated by reference to Exhibit 10.35 of the Form S-1 file number 333-283820)
10.2	Form of Inducement Letter (incorporated by reference to Exhibit 10.1 of the 8-K filed February 13, 2025)
10.3	Form of Securities Purchase Agreement (incorporated by reference to Exhibit 10.1 of the 8-K filed February 26, 2025)
10.4	Placement Agency Agreement between Moleculin Biotech, Inc. and Roth Capital Partners, LLC (incorporated by reference to Exhibit 10.2 of the 8-K filed February 26, 2025)
31.1*	Certification of Principal Executive Officer Pursuant to Section 302 of Sarbanes-Oxley Act of 2002
31.2*	Certification of Principal Financial Officer Pursuant to Section 302 of Sarbanes-Oxley Act of 2002
32.1*+	Certification of Principal Executive Officer Pursuant to Section 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
32.2*+	Certification of Principal Accounting and Financial Officer Pursuant to Section 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS*	Inline XBRL Instance Document (the Instance Document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document)
101.SCH*	Inline XBRL Taxonomy Extension Schema Document
101.CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF*	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB*	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

* Filed herewith.
+ The certifications on Exhibit 32 hereto are deemed not “filed” for purposes of Section 18 of the Exchange Act or otherwise subject to the liability of that Section. Such certifications will not be deemed incorporated by reference into any filing under the Securities Act or the Exchange Act.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

MOLECULIN BIOTECH, INC.

Date: May 13, 2025

By: /s/ Walter V. Klemp
Walter V. Klemp,
Chief Executive Officer and Chairman
(Principal Executive Officer)

Date: May 13, 2025

By: /s/ Jonathan P. Foster
Jonathan P. Foster,
Executive Vice President & Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 31.1

OFFICER'S CERTIFICATION PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Walter V. Klemp, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Moleculin Biotech, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

    a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

May 13, 2025

By: /s/ Walter V. Klemp
Walter V. Klemp
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

OFFICER'S CERTIFICATION PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Jonathan P. Foster, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Moleculin Biotech, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

    a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

May 13, 2025

By: /s/ Jonathan P. Foster
Jonathan P. Foster
Executive Vice President and Chief Financial Officer
(Principal Financial Officer and Principal Accounting Officer)

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report on Form 10-Q for the quarter ended March 31, 2025 of Moleculin Biotech, Inc. (the "Company") as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Walter V. Klemp, Chief Executive Officer of the Company, hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

- The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C 78m or 78o(d)); and
- The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: May 13, 2025

By: /s/ Walter V. Klemp
Walter V. Klemp
Chief Executive Officer
(Principal Executive Officer)

A signed original of this written statement required by Section 906 has been provided to Moleculin Biotech, Inc. and will be retained by Moleculin Biotech, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.

Exhibit 32.2

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report on Form 10-Q for the quarter ended March 31, 2025 of Moleculin Biotech, Inc. (the "Company") as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Jonathan P. Foster, Chief Financial Officer of the Company, hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

- The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C 78m or 78o(d)); and

- The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: May 13, 2025

By: /s/ Jonathan P. Foster
Jonathan P. Foster
Executive Vice President and Chief Financial Officer
(Principal Financial Officer and Principal Accounting Officer)

A signed original of this written statement required by Section 906 has been provided to Moleculin Biotech, Inc. and will be retained by Moleculin Biotech, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.